



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,111	05/02/2001	Ya-Chan Cheng	148693.00359	5405
7590	11/18/2004		EXAMINER	
Thomas T. Moga, Esq. Dickinson Wright PLLC 1901 L Street NW Suite 800 Washington, DC 20036			STOCK JR, GORDON J	
			ART UNIT	PAPER NUMBER
			2877	
DATE MAILED: 11/18/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/847,111	CHENG, YA-CHAN	
Examiner	Art Unit		
Gordon J Stock	2877		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 26 August 2004.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-7,9-15 and 17-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-7,9-15 and 17-26 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### *Claim Objections*

1. **Claims 1, 9, and 17** are objected to for the following: they appear to be a literal translation into English from a foreign document and do not comply with customary idiomatic English. Specifically, the verb tenses are in error. For example in claim 1 line 3: "locating on a transport apparatus" should be –is located on a transport apparatus--. Corrections required.

### *Claim Rejections - 35 USC § 112 and 35 USC § 101*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. **Claims 1-7, 9-15, 17-26** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, in regards to **claims 1, 9, and 17**, the term following "a lens" "to measure the thickness of said wafer and said datum slice" is indefinite, for it is unclear as to how a lens measures, since a lens is a passive device in a measuring system. Clarification is required.

**Claims 2-7, 10-15, and 18-26** are rejected for depending upon a rejected base claim.

3. **Claims 24-26** are rejected under 35 U.S.C. 112 second paragraph as being indefinite, for **claims 24-26** claim both an apparatus, a measuring system, and the method steps of placing, moving, irradiating, and analyzing. A single claim which claims both an apparatus and the

method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. *In Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990).*

**Claims 24-26** are rejected under 35 U.S.C. 101 based on the theory that **claims 24-26** are directed to neither a “process” nor a “machine,” but rather embraces or overlaps two different statutory classes of invention set forth in U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. *Id.* at 1551.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-2, 6, 7, 9, 10, 14-15, 21-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)** in view of **Sato et al. (5,766,360)**.

As for **claims 1-2, 6, 7, 9, 10, 14-15, 21-25**, Imai in a film thickness measuring apparatus discloses the following: a stage located on a transport apparatus, wafer transport chamber apparatus (Fig. 1: 54, 48); a datum platen for the wafer itself is the source of the datum (Fig. 1: 62) with wafer cassette too (Fig. 1: C); a lens above stage in film thickness measuring system (Fig. 1: 56, 58); a gas supplier that supplies inert nitrogen gas (Fig. 1: 68, 70, 72); a first gas nozzle on a side of said datum platen to exhaust gas into chamber (Fig. 1: 64c, 64d); a second nozzle on side of stage (Fig. 1: 64a); a first tube and second tube suggested by gas pipes from gas supplier to nozzles (Fig. 1: 66), wherein a gas stream is formed from arrows entering chamber from nozzles to exhaust system (Fig. 1: 64a-64e, 76, 80, 82); a transport slot that has a channel

to collect and exhaust gases (Fig. 1: 76); gas extracting apparatus with third tube suggested by arrow from 76 to 82 in Fig. 1; valve on first nozzle (Fig. 1: 70); a robot moves wafer (Fig. 1: 62); as for a movable stage, Imai is silent. However, the system is a film measuring system (Fig. 1: 56 and 58). And movable stages are well known in the art for positioning and aligning wafers in measurement systems. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the measuring table be movable in order to position the wafer precisely under the measurement apparatus above. As for measuring the thickness of the wafer, he is silent, but the system measures film thickness (col. 5, lines 1-10). Sato in a substrate processing apparatus teaches that film measuring may comprise measuring the thickness of the wafer before and after film deposition (col. 6, lines 10-15). Therefore, it would be obvious to one skilled in the art to substitute film thickness with measuring wafer thickness before and after film deposition, for they are equivalent measurements in the art, for measuring film thickness on a wafer.

6. **Claims 3, 11, 17, 19, 20, and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)** in view of **Sato et al. (5,766,360)** further in view of **Iida et al. (5,527,417)**.

As for **claims 3 and 11**, Imai in view of Sato disclose everything as above (see **claims 1 and 9** above). In addition, Imai discloses a second nozzle to the oxygen supplier (Fig. 1: 70). He is silent concerning valves on the tubes to the other plurality of nozzles, but there is at least one valve to one nozzle (Fig. 1: 70 with 72). However, Iida in a wafer process apparatus teaches having a valve for a nozzle to control gas into the chamber (col. 20, lines 1-15). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have

each nozzle have an accompanying valve in order to control the amount of gas entering the chamber.

As for **claims 17, 19, 20, and 26**, Imai in a film thickness measuring apparatus discloses the following: a stage located on a transport apparatus, wafer transport chamber apparatus (Fig. 1: 54, 48); a datum platen for the wafer itself is the source of the datum (Fig. 1: 62) with wafer cassette too (Fig. 1: C); a lens above stage in film thickness measuring system (Fig. 1: 56, 58); a gas supplier that supplies inert nitrogen gas (Fig. 1: 68, 70, 72); a first gas nozzle on a side of said datum platen to exhaust gas into chamber (Fig. 1: 64c, 64d); a second nozzle on side of stage (Fig. 1: 64a); a first tube and second tube suggested by gas pipes from gas supplier to nozzles (Fig. 1: 66), wherein a gas stream is formed from arrows entering chamber from nozzles to exhaust system (Fig. 1: 64a-64e, 76, 80, 82); a transport slot that has a channel to collect and exhaust gases (Fig. 1: 76); gas extracting apparatus with third tube suggested by arrow from 76 to 82 in Fig. 1; valve on first nozzle (Fig. 1: 70); a robot moves wafer (Fig. 1: 62); as for a movable stage, Imai is silent. However, the system is a film measuring system (Fig. 1: 56 and 58). And movable stages are well known in the art for positioning and aligning wafers in measurement systems. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the measuring table be movable in order to position the wafer precisely under the measurement apparatus above. As for measuring the thickness of the wafer, he is silent, but the system measures film thickness (col. 5, lines 1-10). Sato in a substrate processing apparatus teaches that film measuring may comprise measuring the thickness of the wafer before and after film deposition (col. 6, lines 10-15). Therefore, it would be obvious to one skilled in the art to substitute film thickness with measuring wafer thickness before and after

film deposition, for they are equivalent measurements in the art, for measuring film thickness on a wafer.

In addition, Imai discloses a second nozzle to the oxygen supplier (Fig. 1: 70). He is silent concerning valves on the tubes to the other plurality of nozzles, but there is at least one valve to one nozzle (Fig. 1: 70 with 72). However, Iida in a wafer process apparatus teaches having a valve for a nozzle to control gas into the chamber (col. 20, lines 1-15). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have each nozzle have an accompanying valve in order to control the amount of gas entering the chamber.

7. **Claims 4, 5, 12, and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)** in view of **Sato et al. (5,766,360)** further in view of **Danese (6,272,768)**.

As for **claims 4, 5, 12, 13**, Imai in view of Sato disclose everything as above (see **claims 1 and 9** above). However, they are silent concerning a venturi structure for the exhaust system or a motor for the exhaust system. Danese in an apparatus for processing wafers teaches that venturi pumps and root pumps are typical vacuum pumps for withdrawing fluids (col. 7, lines 5-25). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made that the system may comprise a venturi structure or a motor for typical vacuum pumps for withdrawal of fluids for wafer processing systems comprise venturi effect pumps or root pumps.

8. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Imai et al. (5,818,596)** in view of **Sato et al. (5,766,360)** further in view of **Iida et al. (5,527,417)** further in view of **Danese (6,272,768)**.

As for **claim 18**, Imai in view of Sato and Iida disclose everything as above (see **claim 17** above). However, Imai is silent concerning a venturi structure for the exhaust system. Danese in an apparatus for processing wafers teaches that venturi pumps are typical vacuum pumps for withdrawing fluids (col. 7, lines 5-25). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made that the system may comprise a venturi structure for typical vacuum pumps for withdrawal of fluids for wafer processing systems comprise venturi effect pumps.

*Response to Arguments*

9. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. In addition, the remarks filed on August 26, 2004 in regards to the rejection of the claims under 35 U.S.C. 112 second paragraph in the last action are not found persuasive, for a lens in an optical measuring system is a passive device, and it is unclear how the lens itself would measure the light coming from the wafer when the lens allows the light to pass through it.

*Conclusion*

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

Art Unit: 2877

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

#### ***Fax/Telephone Numbers***

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

Art Unit: 2877

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12

gs  
July 28, 2004



Sandra V. Smith  
Primary Examiner  
Art Unit 2877